FOREST ROAD EXCISE TAX SUMMARY SHEET

Region: Northeast

Timber Sale Name: Silver Bell

Application Number: 76191

Excise Tax Applicable Activities

Construction: 14,669 **linear feet**
Road to be constructed (optional and required) but not abandoned

Reconstruction: 9,077 **linear feet**
Road to be reconstructed (optional and required) but not abandoned

Abandonment: 635 **linear feet**
Abandonment of existing roads not reconstructed under the contract

Deactivation: 10,846 **linear feet**
Road to be made undriveable but not officially abandoned.

Pre-Haul Maintenance: 1,056 **linear feet**
Existing road to receive maintenance work (specifically required by the contract) prior to haul

Excise Tax Exempt Activities

Temporary Optional Construction: _____ **linear feet**
Optional roads to be constructed and then abandoned

Temporary Optional Reconstruction: _____ **linear feet**
Optional roads to be reconstructed and then abandoned

New Abandonment: _____ **linear feet**
Abandonment of roads constructed or reconstructed under the contract

STATE OF WASHINGTON

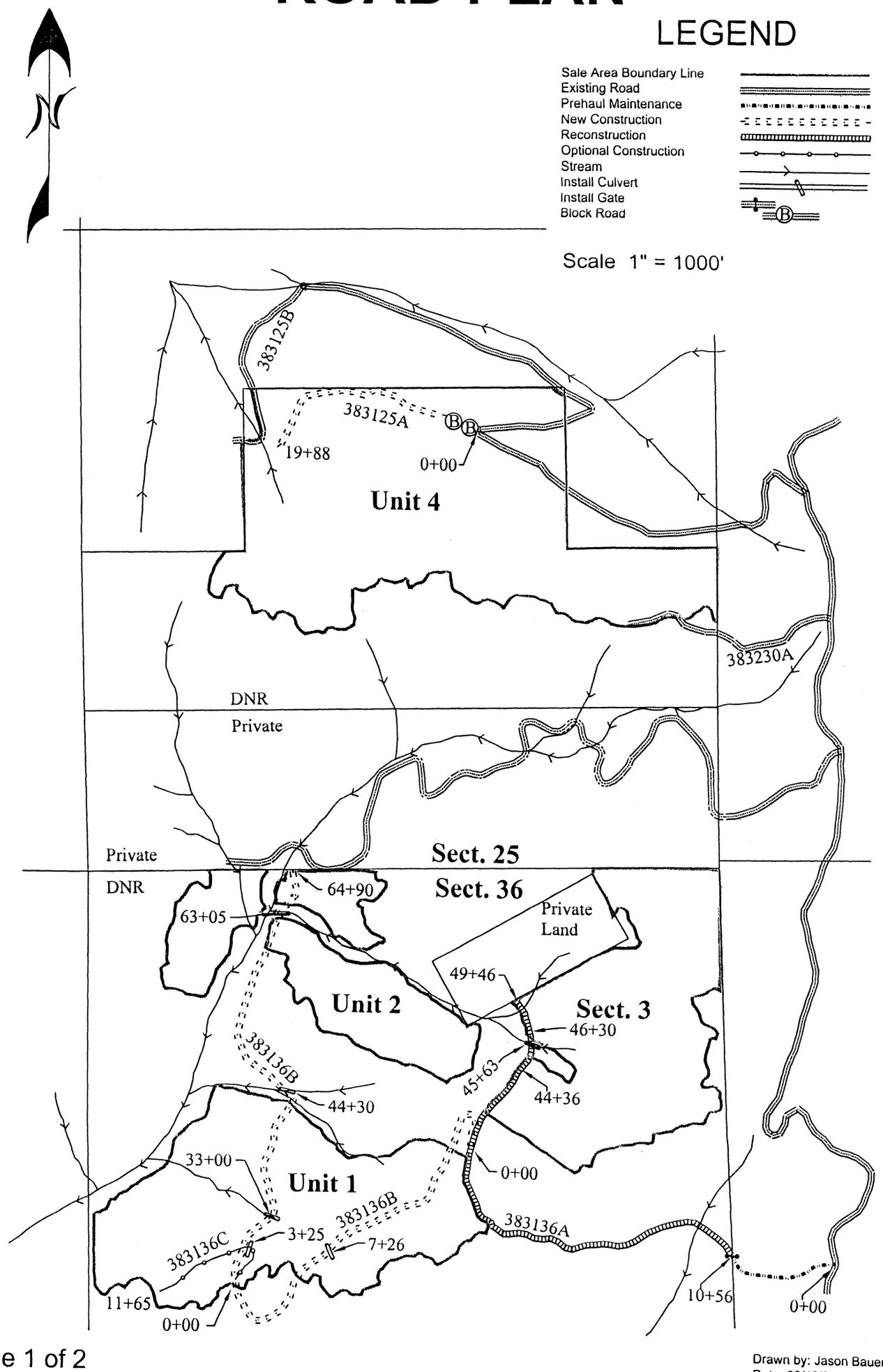
DEPARTMENT OF NATURAL RESOURCES

Agreement No.: 30-076191
Name of Sale: Silver Bell
Trust: 03

Region: Northeast
County: Okanogan

TOWNSHIP 38 NORTH, RANGE 31 EAST, W.M.

ROAD PLAN



Drawn by: Jason Bauer
Date: 03/18/04

STATE OF WASHINGTON

DEPARTMENT OF NATURAL RESOURCES

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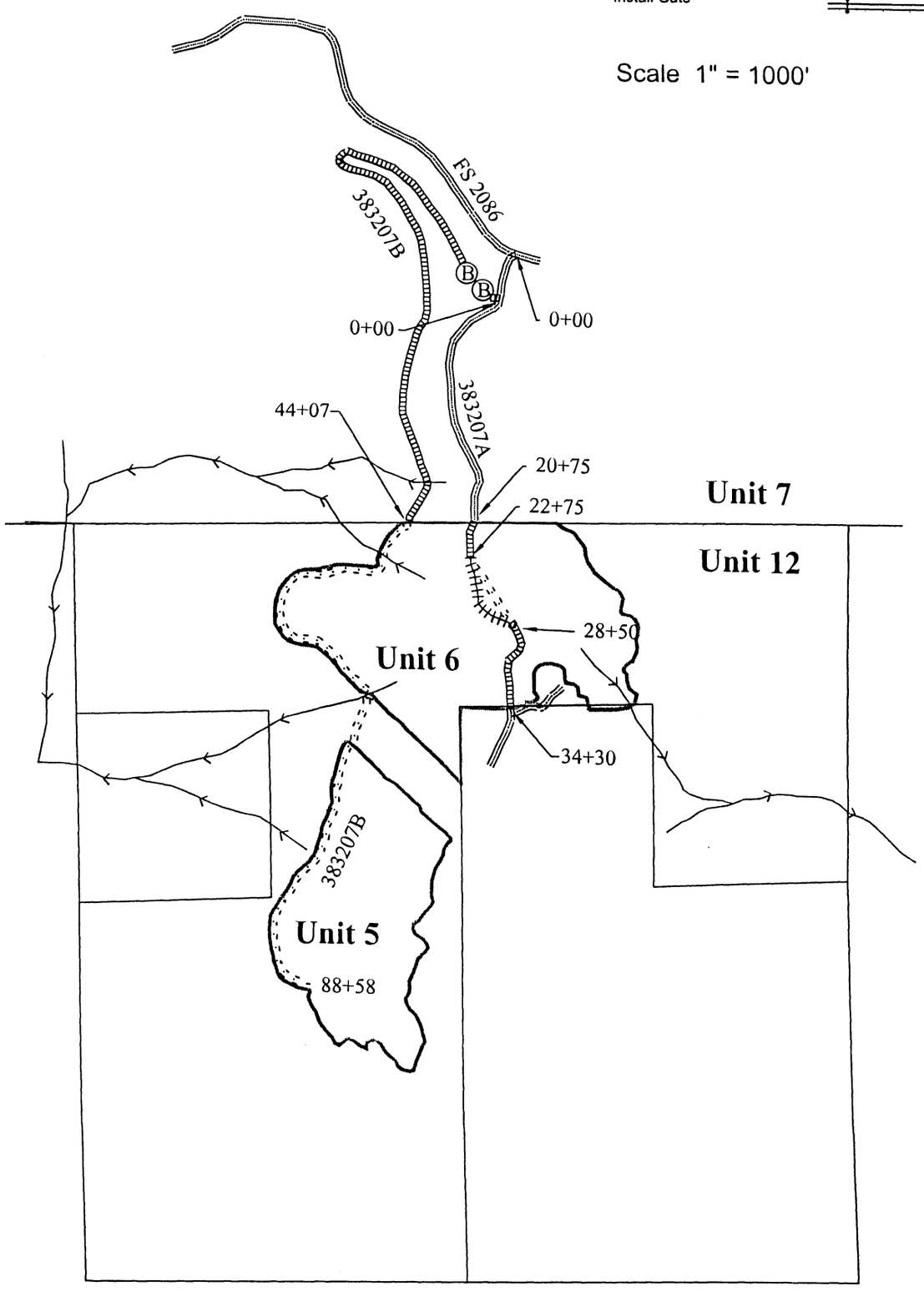
TOWNSHIP 38 NORTH, RANGE 31 EAST, W.M.

ROAD PLAN

LEGEND

Sale Area Boundary Line
Existing Road
Prehaul Maintenance
New Construction
Reconstruction
Abandon
Stream
Block Road
Install Gate

Scale 1" = 1000'



Drawn by: Jason Bauer
Date: 03/18/04

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

AGREEMENT NUMBER: 30-076191

SALE NAME:Silver Bell ROAD PLAN DATE: 03-18-04

SCOPE OF PROJECT

This project includes, but is not limited to construction including; clearing; grubbing; right-of-way debris disposal; excavation and/or embankment to subgrade, acquisition and installation of drainage structures, drilling and blasting of rock in the course of right-of-way construction may be encountered.

DEFINITIONS

Construction
Where in the terms of this contract the activity of building a new right of way and road over ground that has not had a previously established road, or is a relocation that is at least a full right of way width from an existing road.

Reconstruction
Where in the terms of this contract the activity of right of way development and road building in a location that lies completely or partially within the right of way of an existing road and which activity is required or recommended to improve upon the pre-existing conditions. Reconstruction includes activities that would be classified as a **Class II, Class III or Class IV Special Forest Practice.**

Pre-haul Maintenance
Where in the terms of this contract the activity of right of way development and road building in a location that lies completely or partially within the right of way of an existing road and which activity is required or recommended to improve upon the pre-existing conditions. Pre-haul maintenance includes activities that would be classified as a **Class 1 Forest Practice.**

Maintenance
Where the pre-existing conditions of an existing road were acceptable to the State prior to this contract, and the repair and/or replacement of materials, components or structures become necessary as result of deterioration by use or inordinate damage during the terms of this contract.

Designated Skid Trail
Where the State has marked a preferred location for the forwarding of valuable materials to an established road or landing, and which alternatives to the designated location require approval from the Contract Administrator.

Abandonment
Where in the terms of this contract the activity of blocking, controlling the erosion and water movement within natural drainages, removing all drainage structures, and removing unstable fill slopes that have delivery potential. This activity may include but is not limited to obliteration of road prisms, haying and revegetation of exposed soils, and scattering of natural debris.

SECTION 1 - GENERAL CLAUSES

1.1 Clauses in this plan apply to all construction and/or reconstruction, including landings unless otherwise noted.

1.2 Construction, reconstruction, pre-haul maintenance, and abandonment of the following road/s are required. All road/s shall be constructed on the State's location, and in accordance with this Road Plan.

Road	Length	Type
383207A	7.80 stations	Reconstruction
383207A	5.75 stations	New Construction
383207A	6.35 stations	Abandonment
383125A	19.88 stations	New Construction
383136A	38.90 stations	Reconstruction
383136B	64.90 stations	New Construction
383207B	44.07 stations	Reconstruction
383207B	44.51 stations	New Construction
383136A	10.56 stations	Pre-haul Maintenance

1.3 Construction or reconstruction of the following road/s is not required. Road/s constructed shall be on the State's location and in accordance with this Road Plan.

Road	Length	Type
383136C*	11+65	Construction

*Refer to notes in section 5.25 for through-cut depths.

1.4 This sale also includes, but is not limited to reconstruction including;

ROAD	STATIONS	REQUIREMENTS
383207A	20+75 to 22+75	Brush right of way, reshape road surface, reshape/add rolling dips.
383207A	28+50 to 34+30	Brush right of way, reshape road surface, reshape/add rolling dips.
383136A	10+56 to 49+46	Brush right of way, reshape road surface, reshape/add rolling dips and reshape cut slope.
383207B	0+00 to 44+07	Brush right of way, reshape road surface, reshape/add rolling dips.

1.5 This sale also includes, but is not limited to pre-haul maintenance including;

ROAD	STATIONS	REQUIREMENTS
383136A	0+00 to 10+56	Brush right of way, shape road surface, reshape dips.

1.6 If the Purchaser desires a road location or design change, a revised Road Plan shall be submitted to the State for consideration.

1.7 On this plan, quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions, or the Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to, solid subsurface rock, subsurface springs or saturated ground, and/or unstable soil conditions.

1.8 Purchaser shall not use roads constructed or reconstructed under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1.9 Roads shall be constructed using track mounted hydraulic or cable excavators unless otherwise authorized, in writing, by the Contract Administrator.

1.10 Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction, as approved in writing by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground slopes. Temporary diversion culverts shall be provided when designed culverts are elevated above natural ground within embankments.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the Contract Administrator prior to the application of rock, or final subgrade compaction.

1.12 Construction restrictions apply to this contract. All construction and transportation of heavy equipment and/or trucks is prohibited between and including the following dates, except as may be authorized, in writing, by the Contract Administrator.

November 1 to June 1

1.21 Maintenance on all road/s used, constructed or reconstructed under this Road Plan shall be performed in accordance with the Forest Access Road Maintenance Specifications.

Rutting of finished road surfaces shall not exceed 4 inches in depth. In the event that surface or base stability problems may persist, the purchaser/contractor will be required to cease operations, or perform corrective maintenance and/or repairs, subject to specifications within this contract, and the written approval of the Contract Administrator.

1.23 Snowplowing shall not be permitted unless authorized, in writing, by the Contract Administrator.

1.24 Gate installations required as part of this contract shall be installed within 30 days of the commencement of road construction operations. Gates shall be kept closed between the passage of trucks and service vehicles, except by permission from the Contract Administrator.

SECTION 2 - CLEARING

2.1 Fell all vegetative material larger than 6 inches d.b.h., or over 20 feet high between the

marked right of way boundaries, and within waste and/or debris areas. If clearing limits are not marked in the field, clearing limits are as specified on the Typical Section Sheet.

2.2 Deck all merchantable right-of-way timber. The decks shall be parallel to the road centerline, and within the cleared right-of-way. The decks shall be free of dirt, limbs and other debris, and removable by standard log loading equipment from the completed roadbed.

2.3 Brushing shall be done in accordance to the attached Brushing Detail. Lesser standards may be applied with permission by the Contract Administrator.

SECTION 3 - GRUBBING

3.1 All stumps shall be removed that fall between grubbing limits shown on the Typical Section Sheet. Those with undercut roots shall be removed. Stumps over 22 inches in diameter shall be split. Stumps over 40 inches in diameter shall be quartered.

3.2 Grubbing Limits are defined as the entire area between the external limits shown on the Typical Section Sheet.

3.3 Removal of stumps shall not be required, within the waste and/or debris areas, provided that they are cut flush with the ground.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1 Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume, within waste area and/or clearing limits as shown on the Typical Section Sheet.

4.2 Right-of-way debris shall be piled. Debris piles shall be made to be burnable, clean, tight, and free of rock or soil material. Piles shall be made no closer than 20 feet to standing timber, and no higher than 10 feet. Dozer blades shall not be permitted for debris piling.

4.3 Debris piles shall be placed within the cleared right-of-way, or in natural openings, as designated by the Contract Administrator. Placement of debris piles outside of the right-of-way limits is subject to the written approval of the Contract Administrator.

4.4 Debris piles will be burned by the State.

4.6 Right-of-way debris shall be scattered outside the right-of-way limits in natural openings. Debris shall not be placed against standing timber. Where natural openings are unavailable or restrictive, alternative debris disposal methods shall be subject to the written approval of the Contract Administrator.

SECTION 5 - EXCAVATION

5.1 Unless controlled by construction stakes or specific design sheets herein, road/s shall be constructed in accordance with dimensions shown on the Typical Section Sheet.

Excavation and embankment slopes shall be constructed to a uniform line, and left rough for easier vegetation.

Organic material shall be excluded from road prism embankments.

Road pioneering operations shall not undercut the final slope, deposit excavated material outside the clearing limits, or restrict drainage.

5.2 Purchaser or road construction contractor shall not bury merchantable material.

5.3 The construction of road grade and alignment shall conform to the State's marked location. The reconstruction of existing road grades shall conform to the original location except as directed by the contract administrator. Grade and alignment shall have smooth continuity, without abrupt changes in direction.

Construction limitations are as follows:

Favorable Grade	Adverse Grade	Minimum Curve Radius
18%	12%	60 feet

Changes in road grade shall not exceed 7%, except as required in this clause.

Adverse grades on curves shall not exceed 10 percent of the curve radius.

Favorable grades through switchbacks shall not exceed 12%.

Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.

The switchback is defined as, the curved segment of road, between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Transition grades required to meet switchback grade limitations, shall be constructed on the tangents preceding and departing from the switchbacks.

5.5 Curve widening shall be added to the inside of curves as follows:

2 feet extra	80 to 100 foot radius curves
4 feet extra	60 to 80 foot radius curves

5.7 Roads shall be built to the dimensions shown on the Typical Section Sheet.

5.8 Except as construction staked or designed, excavation slopes shall be constructed no steeper than shown on the following table:

Material Type	Excavation Slope Ratio
Common Earth (on side slopes to 55%)	1:1
Common Earth (55% to 70% side slopes)	3/4:1
Common Earth (on slopes over 70%)	1/2:1
Fractured or loose rock	1/2:1
Hardpan or solid rock	1/4:1

5.9 Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier re-vegetation.

5.10 Except as construction staked or designed, each embankment side shall be widened as follows:

Height at Centerline	Subgrade Widening
Less than 6 feet	2 feet
6 feet and over	4 feet

5.11 Except as construction staked or designed, embankment slopes shall be constructed no steeper than shown on the following table:

Material Type	Embankment Slope Ratio
Common earth and rounded gravel	1-1/2:1
Angular rock	1-1/4:1
Sandy soils	2:1

5.12 All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts, and routing excavation equipment over the entire width of each lift. Except for areas specifically requiring keyed embankment construction, side hill embankments too narrow to accommodate excavation equipment may be placed by end dumping or side casting until sufficiently wide to support the equipment.

5.14 Except as construction staked or designed, where side slopes exceed 55 percent, full bench construction shall be utilized for the entire subgrade width.

5.15 Waste material may be deposited adjacent to the road prism on side slopes up to 60 percent if the waste material is compacted, free of debris, and more than 50 feet away from live streams and/or culvert installations. On side slopes of 60 percent or more, 90% of excavated materials shall be endhauled or pushed to designated embankment sites, except as approved in writing by the Contract Administrator. All waste embankments shall be compacted in horizontal layers not exceeding 2 feet.

5.24 Turnouts shall be constructed at a maximum distance of 1000 feet apart, unless shown otherwise on drawings. Turnouts shall be intervisible.

5.25 Road 383136C* shall be excavated to the following depths at the given stations.

0+00 Start cut

0+50 Cut depth 10'

1+00 Cut depth 27'

1+25 Cut depth 27'

1+50 Cut depth 28'

1+75 Cut depth 26'

2+00 Cut depth 24'

2+25 Cut depth 16'

2+50 Cut depth 11'

2+75 Cut depth 8'

3+00 Cut depth 5'

3+25 Cut depth 0'

SECTION 6 - DRAINAGE

6.1 Finished subgrade and running surfaces shall be sloped as shown on the Typical Section Sheet, uniform, firm, rut-free, and shaped to ensure road surface runoff in an even, unconcentrated manner.

6.2 Berms shall be removed from shoulders to permit water runoff. The construction of ditchouts will be required where ponding will result from the effects of sidecast debris and waste material.

6.4 Permanent culverts shall be installed as part of this contract. The minimum requirements shall be as designated on the Culvert and Drainage list, and the Road Plan map. Permanent culverts shall be supplied, installed, and maintained by the purchaser during the limits of this contract.

Permanent culverts shall be galvanized (AASHTO Specification No. M36) or corrugated polyethylene tubing (AASHTO Specification No. M196) culverts as designated on the Culvert List.

Annular corrugated bands and culvert ends shall be used on metal culverts. Bands shall have a minimum width of 12 inches. Manufacturer's approved connectors shall be used for corrugated polyethylene tubing.

6.5 Metal, concrete, or plastic culverts and bands removed from the roadbed shall be removed from state land prior to termination of this contract.

6.10 On required roads, permanent culverts, downspouts, flumes, bands and gaskets as listed on the Culvert List which are not installed, shall remain the property of the State.

6.11 Culvert, downspout, flume and energy dissipater installation shall be in accordance with the Culvert and Drainage Specification Detail.

6.13 Any damaged galvanized coating or cut ends shall be treated with a minimum of 2 coats of zinc rich paint.

6.14 Cross drains and surface culverts on road grades in excess of 3 percent shall be skewed at least 30 degrees, from perpendicular to the road centerline.

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but

not less than 3 percent nor more than 10 percent.

6.16 Installation of culverts 30 inches in diameter and over shall be subject to written approval by the Contract Administrator prior to commencing the backfill.

Pipe arches and/or multi-plate culverts shall be installed according to the National Corrugated Pipe Association Installation Manual, and are subject to the inspection and approval of the Contract Administrator prior to placement and backfill.

6.18 Outfalls from drainage structures shall not terminate directly on unprotected soils. Downspouts, flumes and energy dissipaters shall be installed to prevent erosion, and are subject to the approval of the Contract Administrator.

Downspouts and flumes longer than 10 feet shall be staked on both sides at maximum intervals of 10 feet with 6-foot heavy-duty steel posts, and fastened securely to the posts with No. 10 galvanized smooth wire, in accordance with the Culvert and Flume Installation Detail.

6.20 Ditch reshaping, new ditch construction, and headwall construction shall be done concurrently with construction or reconstruction of the subgrade, and prior to any application of surfacing rock. Ditches shall drain to culverts, ditchouts, and natural drainages. The shape of ditches shall be in accordance with the Typical Section Sheet and the Culvert and Drainage Specification Detail.

Site indicative ditching may be required on this project regardless of road template specifications on the Typical Section Sheet, which may require insloping or outsloping of the subgrade. The purchaser/operator will be required, as part of this contract, to construct ditches as directed by the Contract Administrator, where unforeseen site conditions dictate. Ditching will generally be required to control runoff on steeper grades, in conjunction with culvert installations, and approaches to fill embankments.

6.22 Catch basins shall be constructed to resist erosion, with back slopes consistent with standards in Section 5. Minimum dimensions shall be 4 feet wide and 4 feet long, unless specified otherwise on the Culvert List.

6.23 Headwalls shall be constructed in accordance with the Culvert and Drainage Specification Detail. Headwalls shall be constructed at all cross drain culverts, except temporary culverts. Headwalls shall also be constructed at any culvert identified on the Culvert and Drainage List that specifies the placement of riprap.

6.24 Embankment slopes adjacent to culvert inlets and/or outlets at live stream crossings shall be armored with riprap, for a distance of 1 culvert diameter on each side of the pipe, and 1 culvert diameter above the pipe in accordance with the Culvert and Drainage Specifications Detail.

6.28 Rolling dips shall be constructed in accordance with the Rolling Dip Detail, at a maximum spacing that will produce a vertical drop of no more than 10 feet between constructed dips, or between natural drainage paths. Spacing and number of rolling dips may be adjusted by the Contract Administrator.

Rolling dips are constructed by increasing the outslope of the subgrade surface at the required locations. This includes a gradual transition into and out of the rolling dip from the subgrade template as specified on the Typical Section Sheet.

Excavated material from rolling dip construction shall not remain on the subgrade surface in the form of a berm or waterbar. Sidecasting of material removed with excavation equipment shall be sufficient to form a ditchout to direct surface runoff into, through, and away from the rolling dip, so as to not create ponding.

Discharge of water from rolling dips should be directed to reduce sediment movement and sideslope erosion. Direct the discharge into debris concentrations, onto rocky sites, preferably onto ridges rather than directly into draws. Construction location and workmanship are subject to the approval of the Contract Administrator.

6.30 Riprap required as part of the contract shall conform to the minimum riprap specifications for the Riprap Type listed below. Minimum specifications require that riprap be placed at a width of one culvert diameter on each side of the culvert entrance and/or outlet, and to a height of two culvert diameters above the top of the culvert. Use of materials and other sources of riprap are subject to the written approval of the Contract Administrator.

Riprap Type

Light Loose Riprap

6.32 Riprap shall be set in place in conjunction with the construction of embankments. Riprap shall be placed on shoulders, slopes, around culvert inlets and/or outlets as designated on the Culvert and Drainage List or as directed by the Contract Administrator. No placement by end-dumping or dropping of riprap shall be allowed. Riprap shall not restrict the flow of water into culvert inlets or catchbasins.

6.33 Riprap specifications require the material to be hard, sound and durable. It shall be free from segregation, seams, cracks and other defects that tend to destroy its resistance to weather and stream action. The riprap material shall be free of rock fines, soil, organic debris, or other extraneous material.

Heavy Loose Riprap - shall meet the following grading requirements:

Min / Max	Minimum Size	Maximum Size
40% / 90%	35" (2001 lbs)	---

70% / 90%	20" (373 lbs)	---
10% / 30%	---	10" (47 lbs)

Light Loose Riprap - shall meet the following grading requirements:

Min / Max	Minimum Size	Maximum Size
20% / 90%	20" (373 lbs)	36" (2177 lbs)
80% / --	12" (81 lbs)	30" (1260 lbs)
10% / 20%	---	10" (47 lbs)

Concrete Slabs - shall meet the following requirements:

Minimum thickness (h) of 3", minimum width (w) of 12", minimum depth (d) of 12". Slabs shall be placed horizontal in a shingled effect according to the Riprap Specifications.

Concrete Sacks - shall meet the following requirements:

Minimum empty sack dimensions: 12" wide by 24" deep. Aggregate mixture shall be 4 parts sand/gravel and a minimum of 1 part Portland Cement. Openings of each sack shall be securely closed and placed opposite to potential water turbulence. Sacks shall be laid horizontal, in a shingled effect, according to the Riprap Specifications.

SECTION 7 - ROCK

7.5 Select Material is required for surface repair as part of this contract. Removal area for Select Material will be designated by the contract administrator. Placement and quantities of Select Material shall be according to the Rock List.

7.20 Rock applied as surfacing, as designated on the Rock list shall be angular material and have a minimum of 90 percent of the top 4 inches pass a 3-inch square opening. Specifications may be adjusted with approval from the Contract Administrator.

7.22 The Operator may use in place processing, such as a grid roller or other method, if suitable crushing can be demonstrated to meet the surfacing size restrictions. The use of in place processing methods is subject to written approval by the Contract Administrator.

7.30 Placement and compaction of rock shall be accomplished in lifts not to exceed 6 inches uncompacted depth.

7.31 Each lift of rock shall be sloped as shown on the Typical Section Sheet, and shall be uniform, firm, rut free, and shaped to ensure surface runoff in an even, unconcentrated manner.

7.32 Placement of rock shall be accomplished with a crawler tractor in lifts no greater than 6", unless the Contract Administrator approves other methods in writing.

Compaction shall be completed after rock has been spread into place, by walking the spread equipment back and forth over the entire spread surface. The traffic of rock hauling equipment shall be directed to use the entire running surface, and avoid driving in the same tracks, to assist in surface compaction.

7.40 Rock shall be applied as designated on the Rock List and/or spot patching as directed by the Contract Administrator. Quantities specified herein are minimum requirements, and

shall not be subject to reduction.

7.41 Measurement of specified rock depths, are defined as the compacted depth/s using the compaction methods required in this contract.

7.42 Turnouts, turnarounds, and curve widening shall have rock applied to the same depth and specifications as the traveled running surface.

SECTION 8 - STRUCTURES

8.1 Gate installations required as part of this contract shall be installed within 30 days of the commencement of road construction operations. Gates shall be kept closed between the passage of trucks and service vehicles, except by permission from the Contract Administrator

8.2 Steel Vehicle Gate/s shall be supplied and installed in accordance with the Vehicle Gate Detail. Each post shall be set in a minimum of 2 cu. yards of poured in place concrete.

Road	Station
383136A	10+56

8.60 Installation of stream crossing structures shall be in accordance with the manufacturer's requirements. The contractor is responsible for the repair or replacement of damaged materials. Repairs to structural materials will be made only with the direction of the manufacturer, and shall not be commenced without final written approval from the Contract Administrator, representing the State.

SECTION 9 - ROAD AND LANDING DEACTIVATION

9.0 Road/s and/or landings are required to be deactivated as part of this contract. The purchaser shall; reduce or relocate landing debris, to avoid landing failures and potential debris slides; provide for unconcentrated drainage of the road and/or landing surface/s; in a manner, that is approved, in writing, by the Contract Administrator.

Purchaser shall stockpile culverts removed, in a location approved by the contract administrator.

Road deactivation shall be completed within 30 days after approval to proceed has been given by the Contract Administrator.

9.1 The following road/s shall be deactivated by the Purchaser.

Road	Stations
383207B	0+00 to 88+58
383125A	0+00 to 19+88

Road/s shall be deactivated at termination of use.

9.3 Deactivation of the above road/s shall consist of; outsloping the surface to a minimum of 4

percent; constructing non-drivable water bars in conformance with the attached Water Bar detail. Water bars shall be placed at a maximum spacing that will produce a vertical drop of no more than 10 feet between water bars or natural drainage paths, and with a maximum spacing of 400 feet. Water bars shall be skewed at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade. Water bars shall be keyed into existing ditches to ensure relief of water concentrations.

9.6 Road deactivation shall consist of blocking roads with stumps, large boulders, and logging debris at the termination of harvesting or as directed by written approval from the Contract Administrator. The locations of Road Blocks are approximate, as depicted on the Road Plan Map. Locations are site dependent and shall be determined in the field by the Contract Administrator.

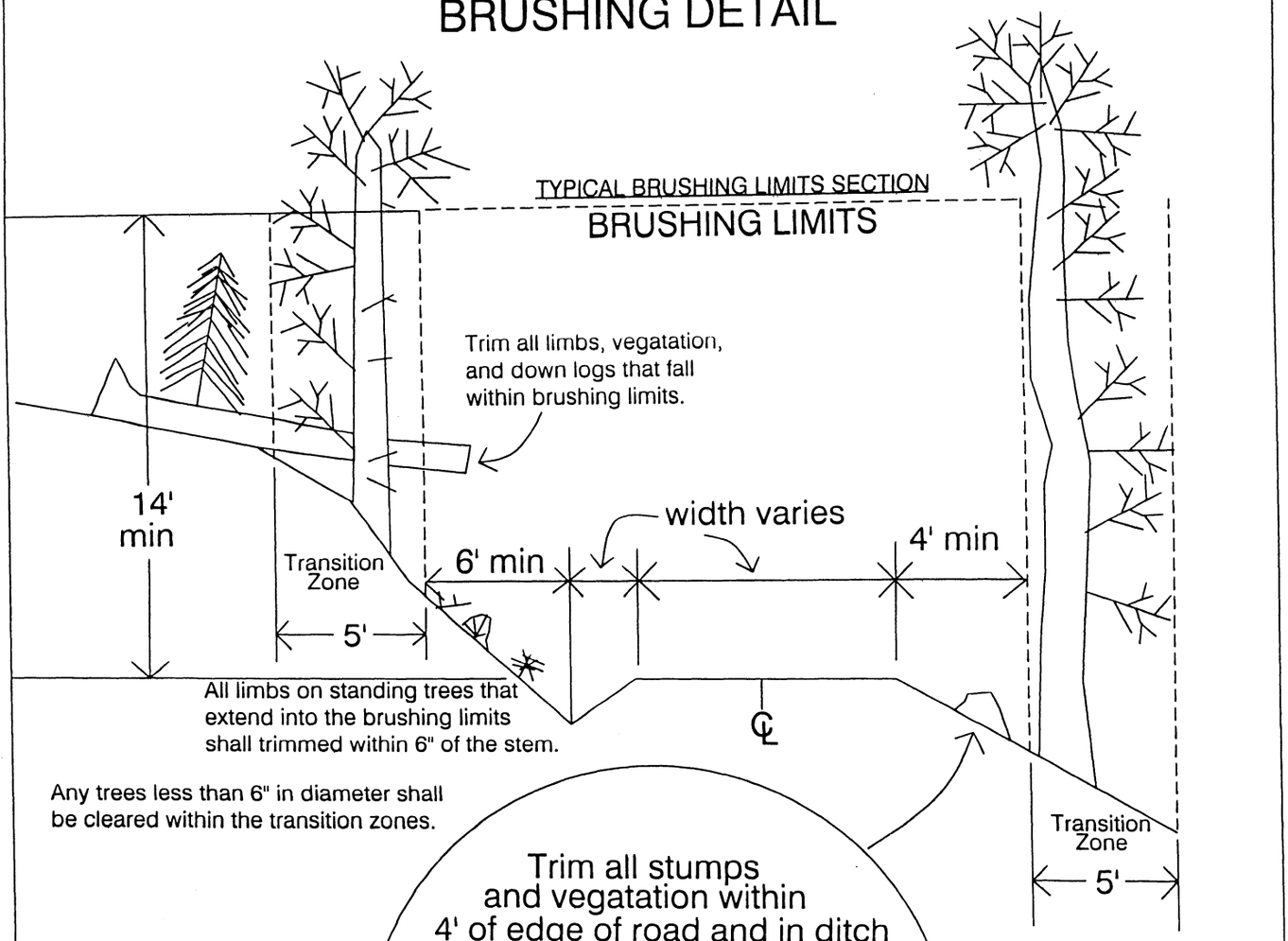
SECTION 10 - ROAD AND LANDING ABANDONMENT

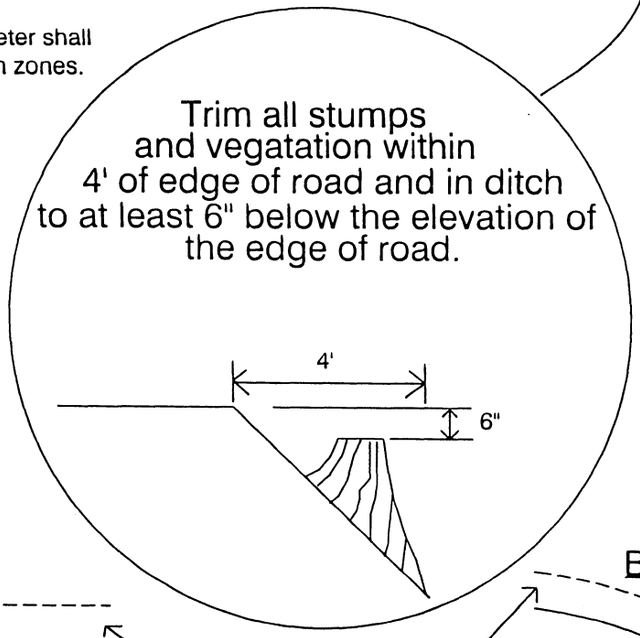
10.1 The following road/s shall be abandoned by the Purchaser at the commencement of the timber sale contract and prior to timber removal.

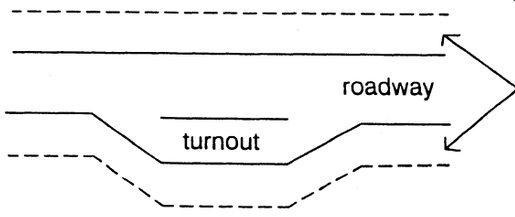
Road	Stations	Type
383207A	22+75 to 29+10	Heavy

10.4 Heavy Abandonment shall consist of: filling the ditches; ripping the surface to a minimum depth of 10 inches; outsloping the surface at a minimum of 45%; removing embankments, all sidecast fill, and placing material into cutbanks and shaping banks to conform with natural ground; constructing non-drivable water bars, as directed by Contract Administrator, in conformance with the attached NON DRIVABLE WATER BAR DETAIL at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 100 feet; or as marked in the field; skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade; keying water bars into ditchline; blocking the road to 4X4 traffic using stumps, large boulders, and logging debris; removing culverts and bridges from State Land; removing ditch cross drain culverts and leaving the resulting trench open; sloping all trench walls and approach embankments no steeper than 1.5:1; removing fill; grass seeding concurrently with abandonment; covering, concurrently with abandonment, all exposed soils within 100 feet of any live stream, with an 8 inch deep layer of straw.

BRUSHING DETAIL



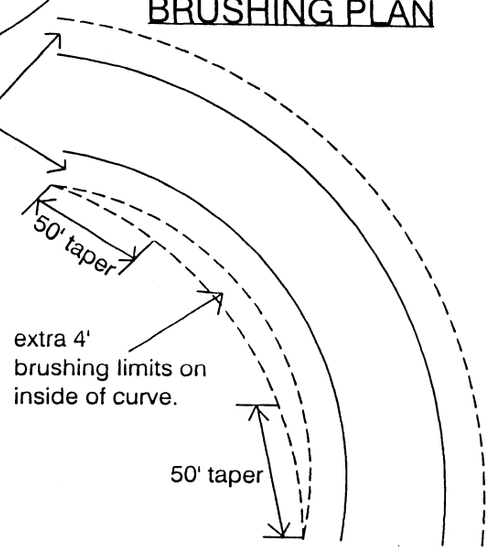




TURNOUT BRUSHING PLAN

Brushing limits as shown on typical section

CURVE BRUSHING PLAN



1. All vegatation within the brushing limits shall be cut to within 8" of the ground, unless otherwise directed by the contract administrator.
2. All brush, trees, limbs, etc. shall be removed from the road surface and ditchline.
3. All debris that may roll or migrate into the ditchline shall be removed.

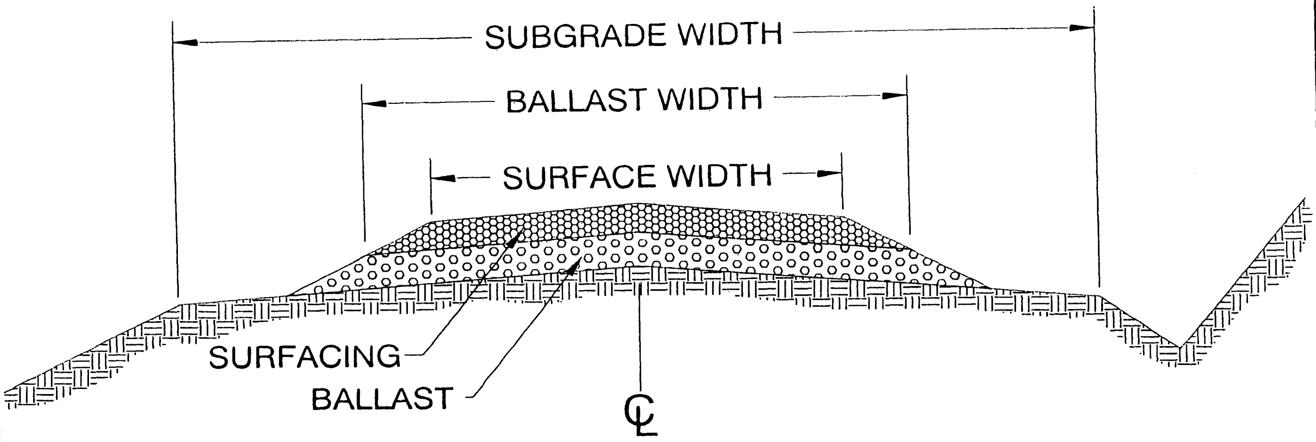
Drawn by: GP

STATE OF WASHINGTON

DEPARTMENT OF NATURAL RESOURCES

Application No.: 30-076191 **Name of Sale: Silver Bell**

ROCK LIST



SECTION VIEW

1. ROCK DEPTHS ARE DEFINED AS COMPACTED DEPTHS.
2. QUANTITIES ARE DEFINED AS COMPACTED VOLUMES.
3. ROCK SLOPES SHALL BE 1.5(H) : 1(V).
4. ALL ROCK SOURCES ARE SUBJECT TO APPROVAL BY THE CONTRACT ADMINISTRATOR.

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	BALLAST SOURCE	BALLAST WIDTH (ft)	BALLAST DEPTH (in)	BALLAST QUANTITY (cu.yd./sta)	SURFACE SOURCE	SURFACE WIDTH (ft)	SURFACE DEPTH (in)	SURFACE QUANTITY (cu.yd./sta)	FABRIC WIDTH (ft)
383136A	33+80	35+74	14		12	6	24				0	
383136B	62+25	63+80	14		12	6	24				0	
							0				0	
							0				0	
							0				0	
							0				0	
							0				0	
							0				0	
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							0				0	
							0				0	
							0				0	
							0				0	
							0				0	
							0				0	
							0				0	
							0				0	

DATE: 03-18-04

STATE OF WASHINGTON

DEPARTMENT OF NATURAL RESOURCES

Application No.: 30-076191 Name of Sale:Silver Bell Date:03-18-04

CULVERT & DRAINAGE LIST

Road Name	Station	CULVERT			LENGTH			RIPRAP			Ditchout	Staked	Rolling Dip	NOTES
		Diameter	Gauge	Skew	Culvert	Downspout	Flume	Inlet C.Y.	Outlet C.Y.	Catchbasin				
383136A	45+63	24	16		32			1	1					1, 2, 3, 6, 8, 10, 11
383136B													10	9
383136B	7+26	18	16		34			1	1					1, 2, 3, 6, 10, 11
383136B	33+00	18	16		34			1	1					1, 2, 3, 6, 10, 11
383136B	44+30	18	16		32			1	1					1, 2, 3, 6, 10, 11
383136B	63+05	24	16		34			1	1					1, 2, 3, 6, 10, 11
383136C													2	9
383136C	3+25	18	16		38			1	1					1, 2, 3, 6, 10, 11
383125A													4	9
383207A													2	9
383207B													18	9

STRUCTURE NOTES

1. Install Headwall - See Detail D1
2. Install Catchbasin - See Detail D1
3. Armor Catchbasin - See Detail D1
4. Armor Ditch
5. Heavy Loose RipRap
6. Light Loose RipRap
7. Step Bevel Pipe Ends
8. Remove Existing Pipe
9. See Rolling Dip Detail D5
10. See Pipe Installation Detail D1
11. Install Energy dissipator - See D1

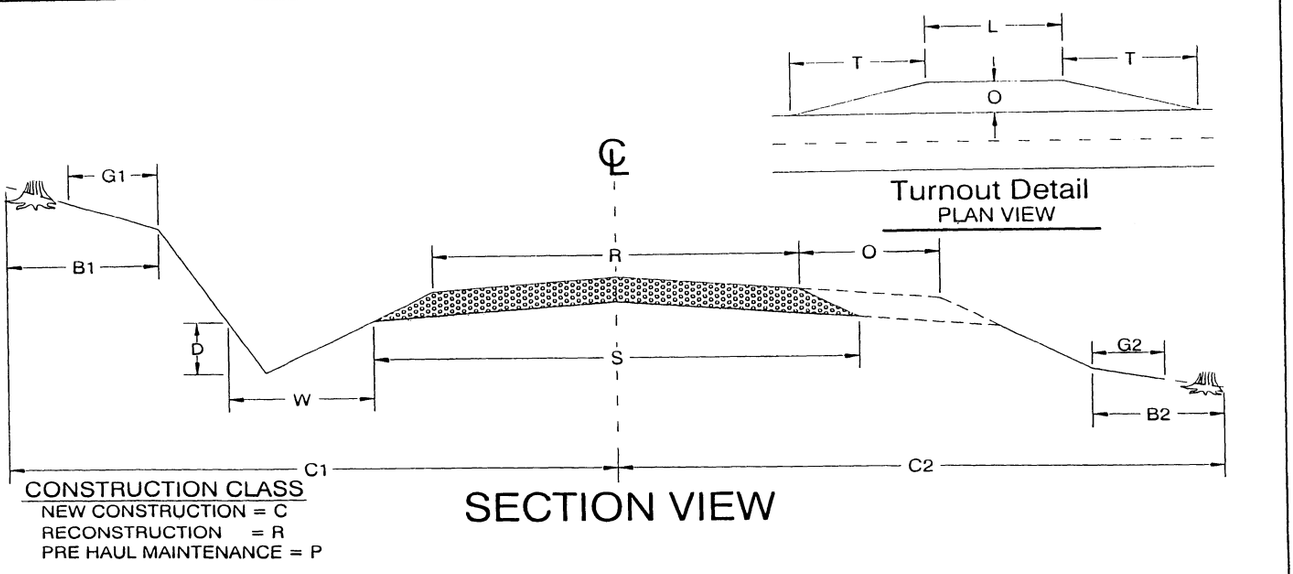
STATE OF WASHINGTON

DEPARTMENT OF NATURAL RESOURCES

Application No.: 30-076191

Name of Sale: Silver Bell

TYPICAL SECTION SHEET



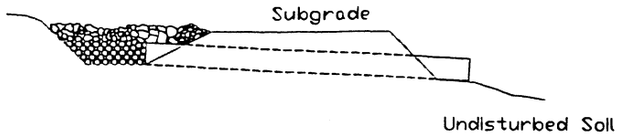
CONSTRUCTION CLASS
NEW CONSTRUCTION = C
RECONSTRUCTION = R
PRE HAUL MAINTENANCE = P

ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS	FULL BENCH	KEYED FILL	SUBGRADE WIDTH (S)	ROAD WIDTH (R)	INSLOPE "/10'	OUTSLOPE "/10'	CROWN " AT CL	DITCH WIDTH (W)	DITCH DEPTH (D)	DITCH 2 SIDES	GRUBBING CUT BANK (G1)	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (B1)	ROAD FILL CLEARING (B2)	R/W CUT CLEARING (C1)	R/W FILL CLEARING (C2)
383125A	0+00	19+88	C			14	12		4					10	10	15	15		
383136A	10+56	49+46	R			14	12		4					5	5	10	10		
383136B	0+00	3+25	C			14	12			2	3	1	Y	10	10	15	15		
383136B	3+25	11+65	C			14	12		4					10	10	15	15		
383136C	0+00	11+65	C			12	10		4					10	10	15	15		
383207A	20+75	22+75	R			14	12		4					5	5	10	10		
383207A	22+75	28+50	C			14	12		4					10	10	15	15		
383207A	28+50	34+30	R			14	12		4					5	5	10	10		
383207B	0+00	44+07	R			14	12		4					5	5	10	10		
383207B	44+07	88+58	C			14	12		4					10	10	15	15		
383136A	0+00	10+56	P			14	12		4					2	2	5	5		

DATE: 03-18-04

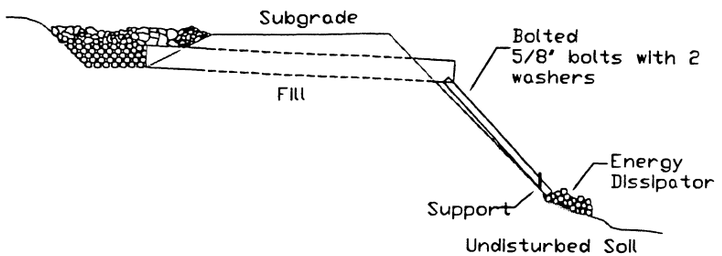
DRAWN BY: RK

CULVERT AND DRAINAGE SPECIFICATIONS DETAIL - D1



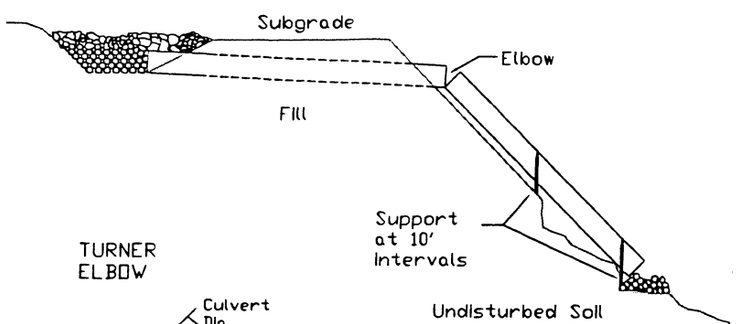
FLUME

Use where ground conditions are uniform, providing for stability of flume.

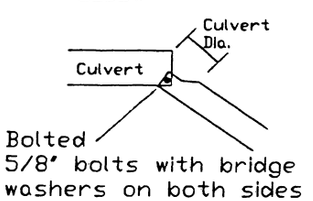


DOWNSPOUT

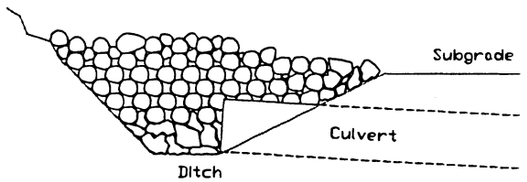
Use where ground conditions are irregular.



TURNER ELBOW

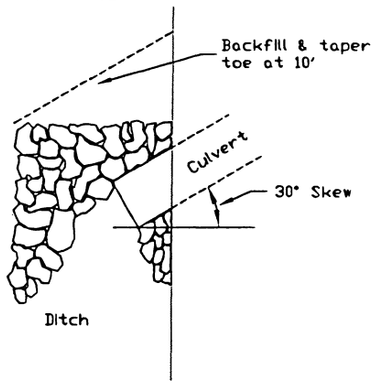


HEADWALLS



Headwall to be constructed of material that will resist erosion

PLAN VIEW



Minimum Cover	Minimum Bed Depth	Min. Trench Width	Nominal Diameter
A	B	C	D
12"	6"	36"	18"
12"	6"	42"	24"
12"	6"	48"	30"
12"	6"	54"	36"

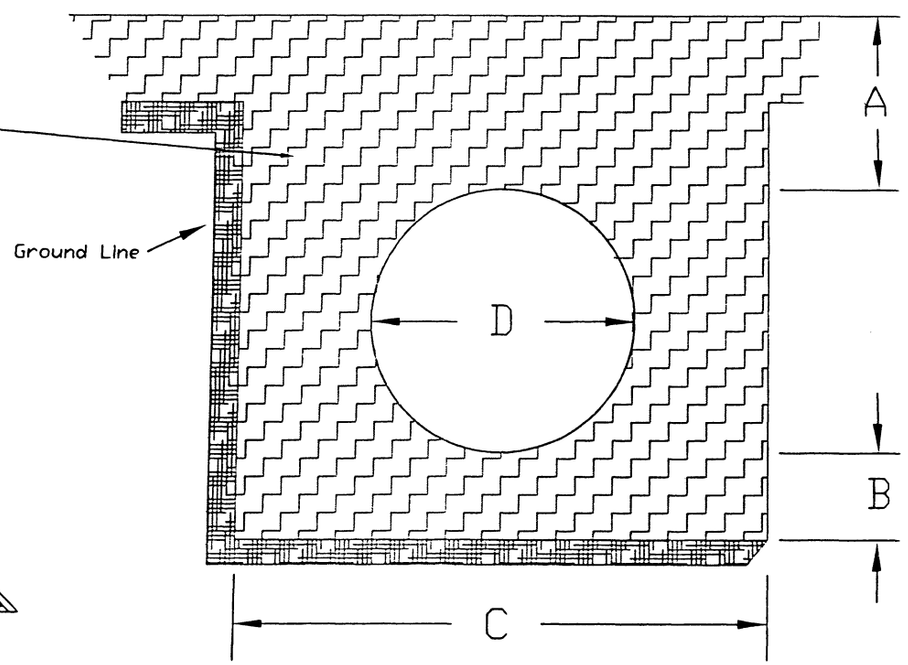
CULVERT BACKFILL & BASE PREPARATION

(For Culverts Less Than 36")

ROAD SURFACE

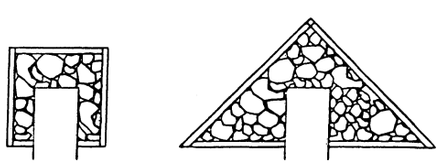
BEDDING MATERIAL:

Use granular material - 3" minus. Large rocks shall be replaced with suitable material. Materials of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill.



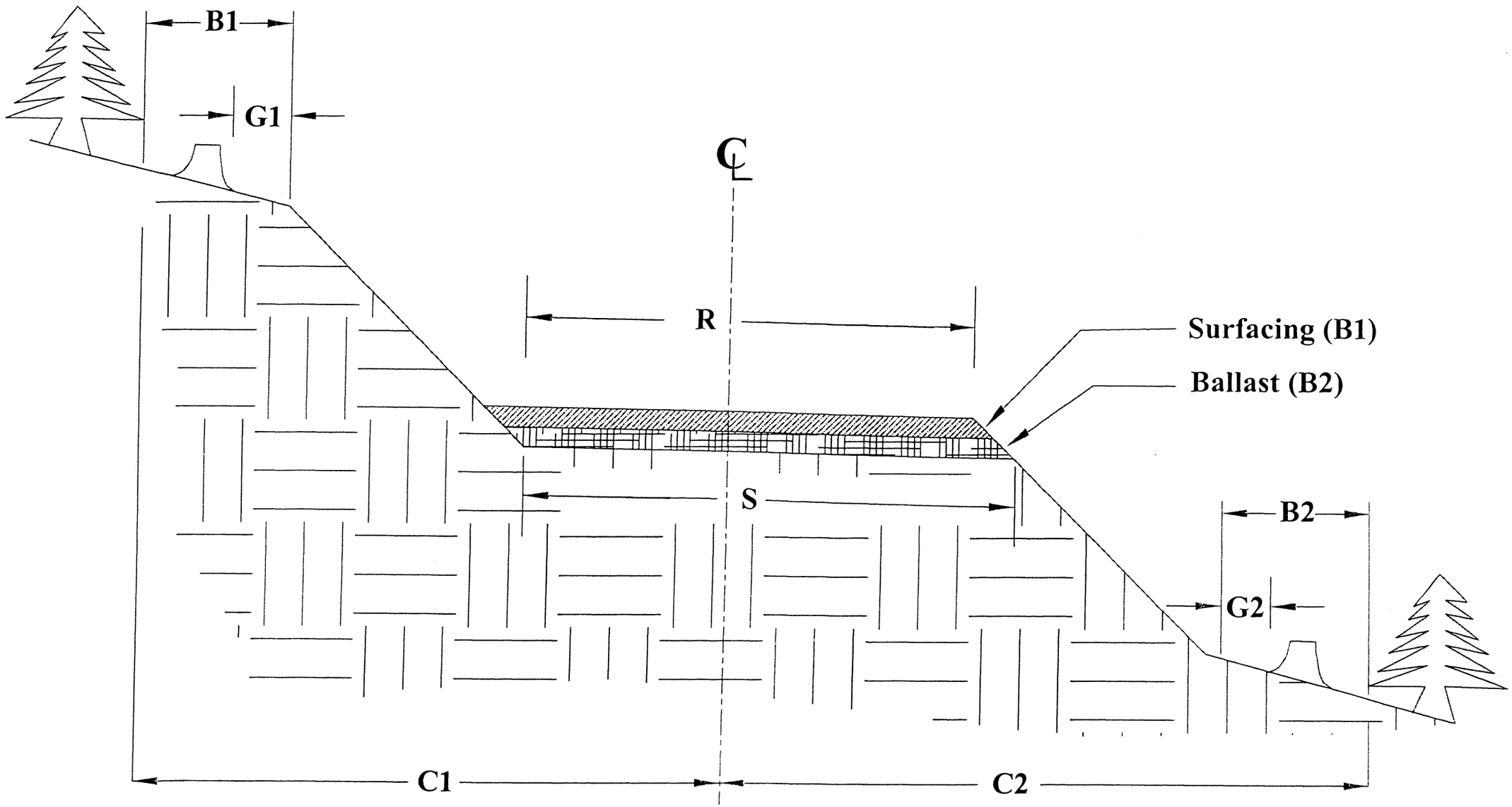
DISSIPATOR SPEC'S
Size In Culvert Diameters

Area	2 X 2
Depth	1
Aggragate	1/3



OUTSLOPED ROAD CROSS-SECTION

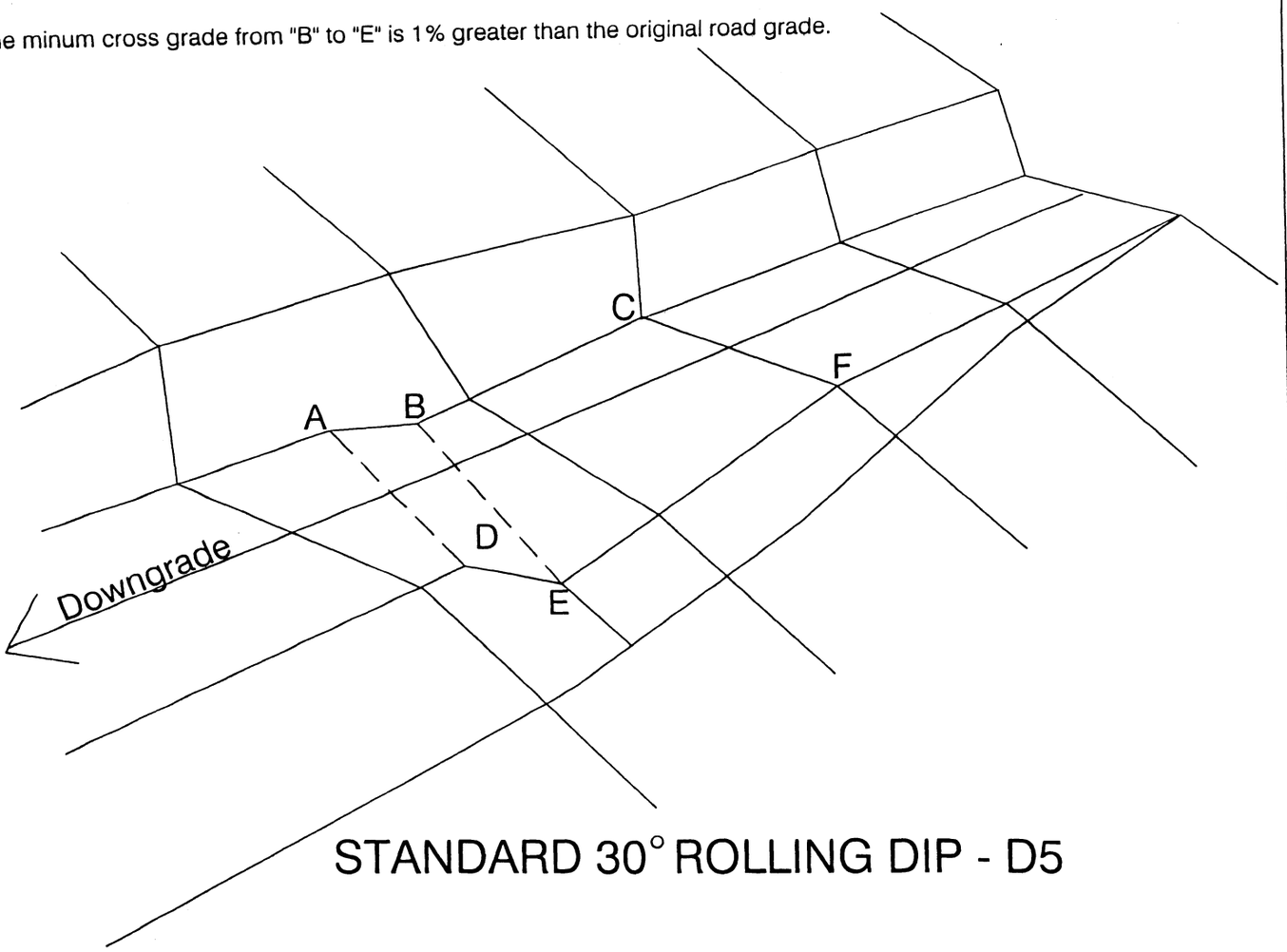
(not to scale)



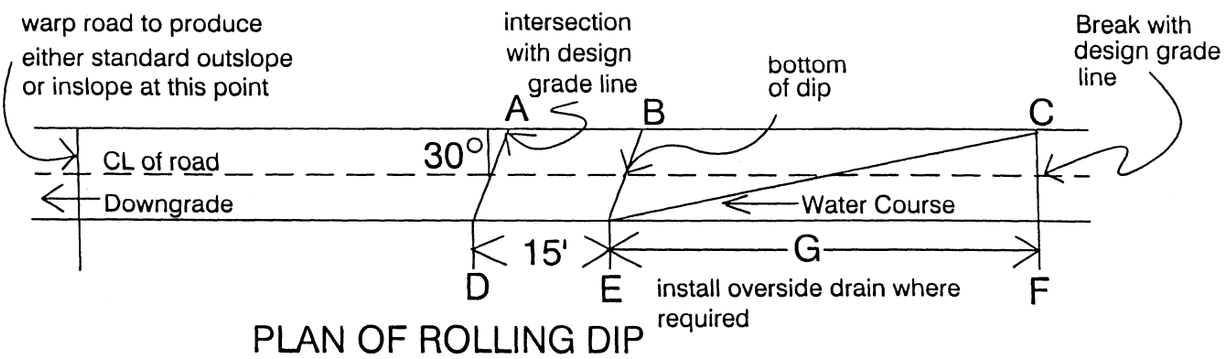
Drawn by: JBB 2/18/03

Note: Plan of dip shown is for an outsloped rolling dip. Dips may be either insloped or outsloped. When insloped, dips shall discharge into a culvert, drop inlet, overside drain, or drainage ditch. When outsloped, they shall discharge into an overside drain or on to natural ground.

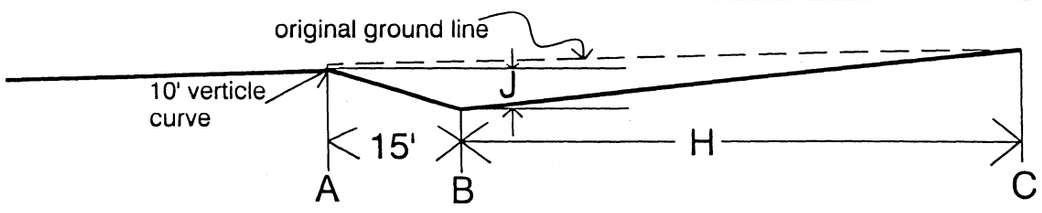
The minum cross grade from "B" to "E" is 1% greater than the original road grade.



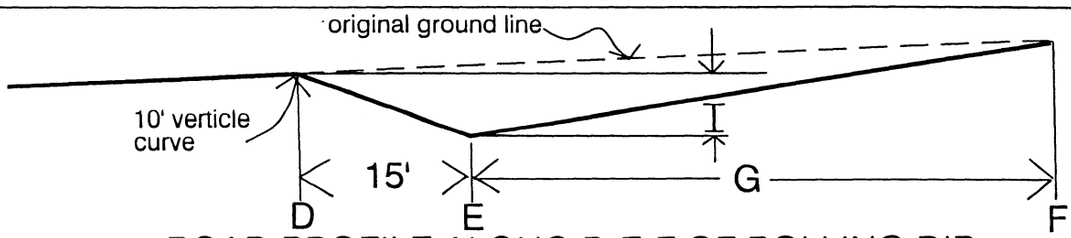
STANDARD 30° ROLLING DIP - D5



PLAN OF ROLLING DIP



ROAD PROFILE ALONG A-B-C OF ROLLING DIP



ROAD PROFILE ALONG D-E-F OF ROLLING DIP

TABLE OF ROLLING DIP DEMENSIONS

Width	12'	14'	16'	ALL		
Dimension	G			H	I	J
Road Grade 6% and under	60	61	62	52	.8	0.3
8%	70	71	72	62	1.0	0.2
10%	80	81	82	72	1.1	0.1

Drawn by: GP

FOREST ROAD ACCESS

Road Maintenance Specifications

1. Prior to Acceptance of Contract or Acceptance on Timber Sale

A. Cuts and Fills

(1) Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1 ½:1 slopes with selected material or as directed. Remove overhanging material from cut slopes.

(2) Material from slides or other sources requiring removal must not be deposited in streams or at locations where it will erode into streams or water courses.

(3) Undesirable slide materials and debris must not be allowed to contaminate or mix with surface material.

B. Roadway Surfaces

(1) Grade and shape road surface, turnouts and shoulder to original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.

(2) Blading must not undercut backslopes at bottom of cut slopes.

(3) Watering may be required to control dust and to retain fine surface rock.

(4) Desirable surface material shall not be bladed off roadway.

(5) Replace surface material lost or worn away.

(6) Remove berms except as otherwise directed by the State.

C. Drainage

(1) keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions to not interrupt flow and cause ponding.

(2) Inspect and clean culverts at least monthly, with additional inspection during storms and periods of high runoff. This must be done even during periods of inactivity.

(3) Place non erodable material or rock at drainage outfalls as required to stabilize the channel.

(4) Maintain drainage structures as required to function as intended.

(5) Keep silt bearing surface runoff from contaminating live streams.

D. Structures

(1) Repair bridges, culverts, cattle guards, fences and other road structures to conditions required by construction specifications.

E. Termination of Use, or End of Season

(1) Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch and culvert clearing and water bars.

F. Debris

(1) Remove fallen timber, limbs, stumps from slopes and roadway, ditchlines and culvert inlets.